Claims:

1. A method for binary number conversion, provided for a digital data processing system to convert an m-bit first binary number to a n-bit second binary number, wherein $n=m*q+r$, $0 \leq r<m$, and m · n · q · r are positive integers, the method for binary number conversion comprising:

duplicating the first binary number from most significant bit to least significant bit thereof to form a n-bit third binary number, wherein r bits of the first binary number duplicated at a last time are defined as a first number, and remaining bits of the first binary number without the first number are defined as a second number;

swapping the first number and the second number to form a fourth binary number;

subtracting a value of the second binary number from a value of the is fourth binary number to obtain a difference value; wherein

when the difference value is larger than or equal to $0.5*(2^m-1)$, adding one to the first number of the third binary number to obtain the second binary number;

when the difference value is less than $-0.05*(2^m-1)$, subtracting one from the first number of the third binary number to obtain the second binary number; and

when the difference value is not larger than or not equal to $0.5*(2^m-1)$ and not less than $-0.05*(2^m-1)$, the third binary number is equal to the second binary number.

2. The method of claim 1, wherein the digital data processing system is a video card.

3. The method of claim 2, wherein the second binary number is a digital signal for representing colors.

4. The method of claim 2, wherein the second binary number is a digital signal for representing coordinates.

5. The method of claim 1, wherein the first number has r bits, and the second number has (m-r) bits.

6. A method for binary number conversion, provided for a digital data processing system to convert an m-bit first binary number to a n-bit second binary number, wherein $n=m*q+r$, $0 \le r<m$, and m、n、q、r are positive integers, the method for binary number conversion comprising:

duplicating the first binary number from most significant bit to least significant bit thereof to form a n-bit third binary number, wherein r bits of the first binary number duplicated at a last time are defined as a first number, and remaining bits of the first binary number without the first number are defined as a second number;

swapping the first number and the second number to form a fourth binary number;

obtaining a difference value between a value of the fourth binary number and a value of the second binary number; and

modifying the first number of the third binary number by a rule referring the difference value to obtain the second binary number.

7. The method of claim 6, wherein the digital data processing system is a video card.

8. The method of claim 7, wherein the second binary number is a digital signal for representing colors.

9. The method of claim 7, wherein the second binary number is a digital signal for representing coordinates.

10. The method of claim 6, wherein the first number has r bits, and the second number has (m-r) bits.

11. The method of claim 6, wherein the different value is equal to a value of the third binary number minus a value of the first binary number.

12. The method of claim 11, wherein the rule is:

when the difference value is larger than or equal to $0.5*(2^m-1)$, adding one to the first number of the third binary number to obtain the second binary number;

when the difference value is less than $-0.5*(2^m-1)$, subtracting one from the first number of the third binary number to obtain the second binary number; and

when the difference value is not larger than or not equal to $0.5*(2^m-1)$ and not less than $-0.5*(2^m-1)$, the third binary number is equal to the second binary number.

13. An apparatus for binary number conversion, provided in a digital data processing system to convert an m-bit first binary number to a n-bit second binary number, wherein $n=m*q+r$, $0\leq r<m$, and m、n、q、r are positive integers, the apparatus for binary number conversion comprising:

a determination unit, input the first binary number, m, and n from an input port, and calculating q and r;

a bits replicator, receiving the first binary number, and q from the determination unit, and duplicating the first binary number q times to obtain a first number;

a mask, receiving the first binary number, m and r from the determination unit, and masking the least significant (m-r) bits of the first binary number to obtain a second number;

a bits swapper, receiving the first binary number from the determination unit, and swapping the second number of the first binary number and a third number formed by the significant (m-r) bits of the first binary number to obtain a third binary number;

an adder, receiving the third binary number from the bits swapper, and receiving the first binary number from the determination unit, then subtracting a value of the first binary number from a value of the third binary number to obtain a

difference value;

a 2-level comparator, receiving the difference value from the adder, and generating a modification instruction based on a rule referring the difference value;

an incrementor/decrementor, receiving the second number from the mask, and receiving the modification instruction from the 2-level comparator, then modifying the second number according to the modification instruction to obtain a fourth number; and

a combine unit, receiving the first number from the bits replicator, and receiving the fourth number from the incrementor/decrementor, then making the first number and the fourth number respectively be most significant bits and least significant bits of the second binary number.

14. The apparatus of claim 13, wherein the digital data processing system is a video card.

15. The apparatus of claim 14, wherein the second binary number is a digital signal for representing colors.

16. The apparatus of claim 14, wherein the second binary number is a digital signal for representing coordinates.

17. The apparatus of claim 13, wherein the rule is:

when the difference value is larger than or equal to $0.5*(2^m-1)$, generating the modification instruction to order the incrementor/decrementor to add one to the second number to obtain the fourth number;

when the difference value is less than $-0.5*(2^m-1)$, generating the modification instruction to order the incrementor/decrementor to subtract one from the second number to obtain the fourth number and

when the difference value is not larger than or not equal to $0.5*(2^m-1)$, and not

less than $-0.5*(2^m-1)$, generating the modification instruction to order the incrementor/decrementor not to modify the second number, and the second number is equal to the fourth number.